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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,489	02/10/2004	Hiroshi Sotozaki	2004_0208	8916

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WASHINGTON, DC 20006-1021

EXAMINER

MACARTHUR, SYLVIA

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 07/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/774,489

Applicant(s)

SOTOZAKI ET AL.

Examiner

Sylvia R. MacArthur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 08 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 10-12, 14, 15, 22-29 and 31-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 10-12, 14, 15, 22-29 and 31-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 10-12, 14, 15, 22-29, and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Togawa (EP 0761387) in view of Kojima et al (US 6,989,228).

Togawa teaches a polishing apparatus and a method of polishing and then cleaning substrates comprising at least two polishing units/section (1a,1b) and cleaning units (7a,7b,8a,8b). The pairs of cleaning units are disposed on one side of the transfer line. Cleaning units 8a,8b also serves as a drying unit, according page 4 lines 42-49. According to page 4, lines 47-49 the cleaning units 7a,7b perform the same cleaning function. The first cleaning unit cleans one substrate at a time as described in page 5 lines 41-52. Transfer robots 4a, 4b are used as conveyor to the substrate throughout the polishing apparatus. Col. 5 lines 25-30 teaches that cleaning units 7a,7b are primary cleaning units while 8a,8b are secondary cleaning units able to perform the same cleaning process. Togawa et al fails to teach a step wherein the first and second substrate are cleaned in the common (same) chamber.

The omission of one of the secondary cleaning units of Togawa would have been an obvious modification in the parallel processing steps of Togawa since there are two secondary cleaning units that perform the same cleaning function. Thus, one of the cleaning units is redundant.

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According to In re Wilson 153 USPQ 740, the omission of an element with the consequent loss of its function is obvious. The consequence of omitting one of the secondary cleaning units of Togowa would be that the primary cleaning steps would occur simultaneously while the secondary step would occur consecutively.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to omit one of the secondary cleaning units of Togowa per In re Wilson.

Regarding the step wherein the primary cleaning step is longer than the secondary cleaning step, col. 5 lines 15-30 teaches that the primary cleaning step comprises scrubbing both sides of the wafer whereas the secondary cleaning unit comprises spin cleaning/drying. Note also that the number of cleaning units maybe modified as taught in col.6 lines 49-57 of Togowa as a matter of optimization.

Claims 11 and 12 of Togawa cites that parallel processing is performed to increase throughput, such that a workpiece is polished by a polishing unit /cleaning unit pair on one side of the apparatus as another workpiece is processed by the same type of pair on the opposite side of the transfer line.

Regarding claims 14 and 31: Togawa fails to specify that the cleaning unit supplies an etching liquid. Nevertheless, Togawa does cite in page 2 line 29 that the wafer is cleaned by water.

3. Claims 1, 10-12, 14, 15, 22-29, and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsuoka et al (US 6,918,814) in view of Kojima et al (US 6,989,228).

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Katsuoka et al teaches a pair of polishing units 10a,10b, a pair of primary cleaning units 18a,b, and secondary cleaning units of 14a,b. Col7 line 22 Katsuoka et al teaches that the polishing apparatus works in a parallel fashion, see col. 7 lines 34-43.

Katsuoka et al in col.6 lines 47-50 teaches that the cleaning units are selected to suit applications and fails to teach the specific type of cleaning apparatus performing the cleaning steps.

Katsuoka et al fails to teach a step wherein the first and second substrate are cleaned in the same chamber.

Regarding the use of the same common cleaning chamber:

Katsuoka et al teaches parallel processing of the workpieces in col. 7 lines 22-46.

Neither Katsuoka et al nor Kojima et al specifically teach a common cleaning chamber. The omission of one of the secondary cleaning units of Katsuoka would have been an obvious modification in the parallel processing steps of Katsuoka since there are two secondary cleaning units that perform the same cleaning function. According to In re Wilson 153 USPQ 740, the omission of an element with the consequent loss of its function is obvious. The consequence of omitting one of the secondary cleaning units of Katsuoka would be that that the primary cleaning steps would occur simultaneously while the secondary step would occur consecutively.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to omit one of the secondary cleaning units of Katsuoka per In re Wilson.

Regarding the step wherein the primary cleaning step is longer than the secondary cleaning step the primary cleaning units 18 scrub the front and back surfaces of the wafer while the secondary cleaning unit 14 performs spin cleaning/drying according to col.6 lines 47-65. The problem of

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wafers backing up the system was resolved by Katsuoka according to col.7 lines 60-67. It is a matter of optimization and using the steps already available within the process to implement a series of steps to ensure that the time difference between the primary and secondary cleaning units does not cause a backup throughout the process. Thus, it would have been obvious for one of ordinary skill the art at the time of the claimed invention to implement the solution (adjust process times) to a known problem (wafer backup) in other areas of the process as it was utilized in the polishing processes.

Regarding claims 14 and 31: Katsuoka et al fails to specify that the cleaning unit supplies an etching liquid. Nevertheless, Katsuoka et al does cite in col. 7 lines 45-58 that the wafer is cleaned by water.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art listed below all teach the optimization of the number of chambers and time of process in the chamber:

US 6074443

US 5429070

US 5928389

US 6132564

US 6454909

US 6270582

Response to Arguments

5. Applicant's arguments with respect to claims 1, 10-12,14,15,22-29, and 31-34 have been considered but are persuasive.

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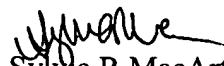
Both the prior art of Togowa et al and that of Katsuoka address the obviousness of modification of the number of process chambers and a matter of optimization in both prior art though two secondary cleaning units are available. It is widely known in the art to take one of the redundant chambers off-line as a matter of optimization or for the purposes of maintenance and repair.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the hours of 8:30 a.m. and 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Sylvia R MacArthur
Patent Examiner
Art Unit 1763

July 24, 2006


PARVIZ HASSANZADEH
SUPERVISORY PATENT EXAMINER